

CLAIMS

1. A suction nozzle for a floor care appliance, comprising:

a nozzle body having a rear discharge duct;;

at least one rotary agitator;

an inner cylindrical section located on an interior of said nozzle body partially forming an agitator chamber; and

a sidewardly extending channel formed in said inner cylindrical section and disposed to extend transversely along said nozzle body.

2. The suction nozzle as set forth in claim 1 wherein said sidewardly extending channel is disposed centered above said at least one rotary agitator.

3. The suction nozzle as set forth in claim 1 wherein said sidewardly extending channel further includes a top wall, and a first and second opposing sidewalls.

4. The suction nozzle as set forth in claim 1 wherein said sidewardly extending channel is hemi-spherical in shape.

5. A suction nozzle for a floor care appliance, comprising:

a nozzle body having a rear discharge duct;;

at least one sidewardly extending duct communicating with said rear discharge duct;

said sidewardly extending duct being disposed to extend transversely along said cylindrical nozzle body;

said sidewardly extending duct including a bottom wall;
said bottom wall forming a nozzle supporting lip;
said sidewardly extending duct also including a pair of vertically extending walls;

5 one of said vertically extending walls being spaced from said supporting lip to provide an open slot for air and dirt impingement on said nozzle supporting lip and transport along said sidewardly extending duct;

said sidewardly extending duct providing a generally constant air flow velocity characteristic by expanding in cross-section area along said nozzle body toward said rear discharge duct;

at least one rotary agitator;

an inner cylindrical section located on the interior of said nozzle body partially forming an agitator chamber; and

a sidewardly extending channel formed in said inner cylindrical section and disposed to extend transversely along said nozzle body.

6. The suction nozzle as set forth in claim 5, wherein said sidewardly extending duct is disposed along a front side of said nozzle body.

20 7. The suction nozzle as set forth in claim 6, wherein said sidewardly extending duct at the front side of said nozzle body includes a communicating portion that extends over said sidewardly extending duct to fluidly communicate with said rear discharge duct.

8. The suction nozzle as set forth in claim 7 wherein said communicating portion is

generally provided with constant cross-sectional areas to improve air carrying velocity.

9. The suction nozzle as set forth in claim 5 wherein said sidewardly extending duct is disposed along the rear side of said nozzle body.

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10. The suction nozzle as set forth in claim 5 wherein said nozzle body includes a sidewardly extending duct disposed along a front side of said nozzle body and a sidewardly extending duct disposed along a rear side of said nozzle body.

11. The suction nozzle as set forth in claim 10 wherein said sidewardly extending duct disposed along the front side of said nozzle body and said sidewardly extending duct disposed along the rear side of said nozzle body communicate with said rear discharge duct.

12. The suction nozzle as set forth in claim 11 wherein said sidewardly extending channel is disposed centered above said rotary agitator.

13. The suction nozzle as set forth in claim 5 wherein said sidewardly extending channel further includes a top wall, and a first and second opposing sidewalls.

14. The suction nozzle as set forth in claim 5 wherein said sidewardly extending channel is hemi-spherical in shape.

15. A suction nozzle for a floor care appliance, comprising:

a nozzle body having a rear discharge duct;;

at least two rotary agitators;

an inner cylindrical section located on an interior of said nozzle body partially forming an agitator chamber; and

a sidewardly extending channel formed in said inner cylindrical section and disposed to extend transversely along said nozzle body.

16. The suction nozzle as set forth in claim 15 wherein said sidewardly extending channel is disposed centered above said at least two rotary agitators.

17. The suction nozzle as set forth in claim 15 wherein said sidewardly extending channel further includes a top wall, and a first and second opposing sidewalls.

18. The suction nozzle as set forth in claim 15 wherein said sidewardly extending channel is hemi-spherical in shape.

19. A suction nozzle for a floor care appliance, comprising:

a nozzle body having a rear discharge duct;

at least one sidewardly extending duct communicating with said rear discharge duct;

said sidewardly extending duct being disposed to extend transversely along said nozzle body;

said sidewardly extending duct including a bottom wall;

said bottom wall forming a nozzle supporting lip;

said sidewardly extending duct also including a pair of vertically extending

walls;

one of said vertically extending walls being spaced from said supporting lip to provide an open slot for air and dirt impingement on said nozzle supporting lip and transport along said sidewardly extending duct;

- 5 said sidewardly extending duct providing a generally constant air flow velocity characteristic by expanding in cross-section area along said nozzle body toward said rear discharge duct; and
- at least two rotary agitators.

20. The suction nozzle for a floor care appliance as set forth in claim 19, wherein said sidewardly extending duct is disposed along the front side of said nozzle body.

21. The suction nozzle as set forth in claim 20, wherein said sidewardly extending duct at the front of said nozzle body includes a communicating portion that extends over said sidewardly extending duct to fluidly communicate with said rear discharge duct.

22. The suction nozzle as set forth in claim 21 wherein said communicating portion is generally provided with constant cross-sectional areas to improve air carrying velocity.

- 20 23. The suction nozzle as set forth in claim 19 wherein said sidewardly extending duct is disposed along the rear side of said nozzle body.

24. The suction nozzle as set forth in claim 19 wherein said nozzle body includes a sidewardly extending duct disposed along a front side of said nozzle body and a

sidewardly extending duct disposed along a rear side of said nozzle body.

25. The suction nozzle as set forth in claim 24 wherein said sidewardly extending duct disposed along the front side of said nozzle body and said sidewardly extending duct disposed along the rear side of said nozzle body communicate with said rear discharge duct.

26. A suction nozzle for a floor care appliance, comprising:

a nozzle body having a rear discharge duct;;

at least one sidewardly extending duct communicating with said rear discharge duct;

said sidewardly extending duct being disposed to extend transversely along said nozzle body;

said sidewardly extending duct including a bottom wall;

said bottom wall forming a nozzle supporting lip;

said sidewardly extending duct also including a pair of vertically extending walls;

one of said vertically extending walls being spaced from said supporting lip to provide an open slot for air and dirt impingement on said nozzle supporting lip and transport along said sidewardly extending duct;

said sidewardly extending duct providing a generally constant air flow velocity characteristic by expanding in cross-section area along said nozzle body toward said rear discharge duct;

at least two rotary agitators;

an inner cylindrical section located on an interior of said nozzle body partially forming an agitator chamber; and

a sidewardly extending channel formed in said inner cylindrical section and disposed to extend transversely along said nozzle body.

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27. The suction nozzle as set forth in claim 26, wherein said sidewardly extending duct is disposed along the front side of said nozzle body.

28. The suction nozzle as set forth in claim 27, wherein said sidewardly extending duct at the front of said nozzle body includes a communicating portion that extends over sidewardly extending duct to fluidly communicate with said rear discharge duct.

29. The suction nozzle as set forth in claim 28 wherein said communicating portion is generally provided with constant cross-sectional areas to improve air carrying velocity.

30. The suction nozzle as set forth in claim 26 wherein said sidewardly extending duct is disposed along the rear side of said nozzle body.

31. The suction nozzle as set forth in claim 26 wherein said nozzle body includes a sidewardly extending duct disposed along a front side of said nozzle body and a sidewardly extending duct disposed along a rear side of said nozzle body.

32. The suction nozzle as set forth in claim 31 wherein said sidewardly extending duct disposed along the front side of said nozzle body and said sidewardly extending duct

disposed along the rear side of said nozzle body communicate with said rear discharge duct.

33. The suction nozzle as set forth in claim 26 wherein said sidewardly extending channel is disposed centered above said at least two rotary agitators.

34. The suction nozzle as set forth in claim 26 wherein said sidewardly extending channel further includes a top wall, and first and second opposing sidewalls.

35. The suction nozzle as set forth in claim 26 wherein said sidewardly extending channel is hemi-spherical in shape.

36. An agitator assembly for a floor care appliance, comprised of:

a first agitator;

a second agitator;

a first projection radially extending from an outer surface of said first agitator;

a second projection radially extending from an outer surface of said second agitator; and

wherein said second agitator is driven by said first agitator by said first projection meshing with said second projection.

37. The agitator assembly of claim 36, wherein said first projection is a helical ribbon circumscribing the outer surface of said first agitator and said second projection is a helical ribbon circumscribing said outer surface of said second agitator and a

continuous point of contact is maintained along the helical ribbons circumscribing said first and second agitators during rotation.

38. The agitator assembly of claim 36, wherein said first agitator is rotatably driven by an independent drive motor.

39. The agitator assembly of claim 36, wherein said first agitator is rotatably driven by a belt.

40. An improved agitator assembly for a floor care appliance of the type having a suction nozzle, comprised of a plurality of four agitators wherein said plurality of four agitators are arranged in pairs, each pair being oriented in the longitudinal direction of the suction nozzle.

41. The improved agitator assembly of claim 40 wherein said plurality of four agitators is driven by a single source.

42. The improved agitator assembly of claim 40 wherein said plurality of four agitators are rotatably driven by an independent drive motor.

43. The improved agitator assembly of claim 40 wherein said plurality of four agitators are rotatably driven by a worm gear assembly.

44. The improved agitator assembly of claim 40 wherein said plurality of four agitators

are rotatably driven by at the center of each pair.

45. An improved agitator assembly for a floor care appliance of the type having a suction nozzle, comprised of a plurality of four agitators rotated at the center of the suction nozzle.

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